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TECHNOLOGY DEPT

SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE • MAY 27, 1944



Fruit Follows Flower

See Page 345

A SCIENCE SERVICE PUBLICATION

Show *him* the way to go home



THERE are split seconds when his judgment is the most important thing in the world. The safety of a ship and crew, the fate of a mission, the work and hopes of many men—are in his hands. They are in good hands.

There is no more important task for G-E research and engineering today than in developing equipment to make this—one of the toughest jobs of our time—a little easier and a little safer.

Every day, in every flight, electricity is at work in our bombers and fighters.

Electrically driven gyroscope instruments show the pilot the way to go—in fog, or cloud, or night.

Electric lamps illuminate instrument dials and landing strip.

★ Some Equipment General Electric Builds for Aviation: gyroscope and other instruments, automatic pilots, remote indicating compasses, radio equipment, motors and motor actuator units, generators, unilever power controls, ignition systems, jet propulsion engines, turbosuperchargers, flying suits, lamps, power turrets, computers and sights, hydraulic systems, electronic devices, etc.

BUY WAR BONDS

Radio binds the squadron together and links it to its base; power turrets protect it. The automatic pilot relieves the human pilot at the controls, and unilever power controls give him, in effect, an extra hand by combining the controls for turbosuperchargers and engines.

Electric motors start the engines, retract the landing gear, change the pitch of the propellers.

Electricity heats boots, and gloves, and flying suits of pilot and crew.

Although the American homes of our fliers are half a world away, home base—because of electric instruments in their cockpits, and electric equipment on their planes—is a little nearer, a little surer and more certain. *General Electric Company, Schenectady, N. Y.*

Hear the General Electric radio programs: "The G-E All-girl Orchestra" Sunday 10 p.m. EWT, NBC—"The World Today" news, every weekday 6:45 p.m. EWT, CBS.

GENERAL ELECTRIC

62-6067-211

PUBLIC HEALTH

Measles Preventive

War Department announces that the Army has gamma globulin, which is effective in controlling the disease. Comes from blood collected by Red Cross.

► THE WAR Department announced that it has on hand large supplies of a new, effective measles preventive that can be given soldiers exposed to the disease.

The preventive is known scientifically as gamma globulin. It is being obtained from plasma from the blood collected by the Red Cross for the armed services.

Research by Dr. Edwin J. Cohn, of Harvard Medical School, led to the development of this measles preventive. Dr. Cohn has succeeded in separating from blood plasma by chemical means various components or fractions. One such fraction is fibrin foam, now being used to stop bleeding in surgical operations (See SNL, April 29 and May 6). Another is the gamma globulin, which contains the antibodies developed in the blood to fight an invasion of measles

germs. Presence of these antibodies developed in a person's blood during an attack of measles explains why he ordinarily does not get a second attack.

Since most grown-ups have had measles, the blood they donate to the Red Cross contains these antibodies and also antibodies against other diseases to which they may have built up immunity.

Measles has so far been a very slight problem in the Army, with a very low occurrence rate compared with that of the last war, when at one Army camp alone hundreds of new cases developed day after day and every arriving troop train had from one to six cases in the eruptive, very infectious stage.

Memory of these thousands of soldiers who had measles, many of them dying from the pneumonia that fol-

lowed, led to establishment in 1940 of a Commission on Measles and Mumps under the direction of Dr. Joseph Stokes, Jr., of the University of Pennsylvania Medical School.

This Commission and nine others making up the Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army, with Dr. Francis G. Blake as president, function under the direction of the Preventive Medicine Service of the Office of the Surgeon General.

For over a year members of the Commission on Measles have studied the new measles preventive. Most of the work, the War Department announcement states, was done at Army camps but a significant study was carried out during an outbreak of measles at an eastern girls' college. Among 67 students given the globulin, only one developed an average case of measles, while 18 out of 38 not given the globulin developed average measles.

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PUBLIC HEALTH

Whooping-Cough Epidemic Tests Vaccination Value

► BECAUSE whooping cough hits Iceland in regular epidemic waves at about seven-year intervals, it has been possible to make a test of the value of vaccination as a preventive of that disease, not possible under the less clear-cut conditions prevalent elsewhere. Story of the test is told in the *Journal of the American Medical Association* (May 20) by Dr. Niels Dungal of New York City and two Icelandic colleagues, Dr. Skuli Thoroddsen and Dr. Hreidar Agustsson, both of the University of Iceland in Reykjavik.

There has long been a considerable degree of uncertainty regarding the value of vaccination against whooping cough, the three investigators point out, because there is no way of knowing whether vaccinated children in most countries fail to develop the disease because they are actually protected or merely because they have not subsequently been exposed. The seven-year epidemics in Iceland, however, leave no doubts: when one of them is raging everybody is certain to be exposed, so that failure to develop symptoms can logically mean only that the person concerned is immune.

In a careful follow-through after vaccination of 770 fully vaccinated Icelandic children, it was found that 28.3% did not develop whooping-cough at all,



RECENT ADDITION—This is the eight-ton Armored Car M8, designed by the Ordnance Department to combine the speed and maneuverability of an automobile with the punch and armored protection of a light tank. It has a protectively low silhouette, resembling a turtle's back, and mounts both a 37 mm. cannon and .30 caliber machine gun. A crew of four handles this vehicle, which is intended primarily as a combat reconnaissance car. U. S. Army Signal Corps photograph.

49.5% had it in mild form, 16.9% developed it in "medium" severity, and only 5.3% were seriously sick. Among 122 children who had not been vaccinated, the corresponding numbers were 4.9%, 49.2%, 34.4% and 11.5%, respectively.

CHEMISTRY

Penicillin in Mexico

News brought to United States of new laboratory operated jointly by Mexican and U. S. manufacturing companies to make 10,000,000 units daily.

► A PRECEDENT in United States-Mexican relations that may have far-reaching good results has been set with the establishment in Mexico of the Wyeth-Stille Laboratories for the production of penicillin.

News of this laboratory, which was established in April and by the end of May is expected to be producing 10,000,000 units of life-saving penicillin a day, was brought to the United States by Dr. Jose Zozaya, director of the Mexican Institute of Public Health and Tropical Diseases and member of the Mexican Advisory Council to Science Service.

Dr. Zozaya is also chairman of the Committee of Penicillin Control established in Mexico by presidential decree. It was his idea to get an American drug manufacturing firm to join with a similar firm in Mexico for penicillin production. Having lived several years in Philadelphia, Dr. Zozaya was able to interest Wyeth, Inc., of that city in the project.

The Mexican part of the new penicillin production plant, Stille Laboratories, is 100% Mexican, Dr. Zozaya said. The Philadelphia firm, instead of establishing a laboratory or branch of its own, has joined with the Mexican firm to establish the new laboratory and is sending technical men to train Mexicans in penicillin production methods. The latter will work under Dr. Zozaya's direction.

This is the first time such an arrangement has been worked out and Dr. Zozaya hopes other firms will be encouraged to do the same.

"It will do a lot to take away the bad taste of American capitalism," he said.

Thanks are especially due the American Embassy in Mexico "which has broken a million barriers in getting

Especially noteworthy are the figures at the two extremes: of fully vaccinated children, more than five times as many remained without symptoms as among unvaccinated; and less than half as many became seriously sick.

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this accomplished," Dr. Zozaya declared.

Many lives will be saved in the coming months as a result of its efforts and those of other agencies in getting the penicillin production plant started at once instead of six months from now.

Dr. Zozaya is in the United States now to discuss with Army and Public Health Service authorities and medical school professors a plan he has for making the facilities of his Institute available to American students of tropical diseases. The Institute has not only a laboratory for research in tropical diseases but a 50-bed hospital and branches in other parts of Mexico where young doctors can see and study patients suffering from diseases that war may spread far beyond the tropics as soldiers and European refugees return to their homes.

Typhus fever, brucellosis or undulant fever, malaria, fungus diseases, and intestinal infections are among the diseases of which the Institute can furnish abundant material for study. Besides being of use to young doctors who may have to treat these diseases, Dr. Zozaya hopes that the Institute may have as guests, for six months or so each, medical scientists planning to specialize in the investigation as well as treatment of tropical diseases.

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AERONAUTICS

New Boeing Wind Tunnel Produces Super-Hurricanes

► A NEW concrete wind tunnel has just been put into operation at the Boeing Aircraft Company's Edmund T. Allen Memorial Aeronautical Laboratory.

The 18,000 horsepower electric motor,

built by Westinghouse Electric & Manufacturing Company, is capable of generating super-hurricanes in the 700 miles-an-hour range, about five times the force of an average hurricane.

In this wind tunnel, the largest operated by any private aircraft manufacturer, Boeing engineers will test the behavior of planes, wing shapes and other parts or sections of aircraft at speeds approaching the speed of sound, around 750 miles an hour.

The need for a wind tunnel producing high speeds became evident when air researchers discovered that the aerodynamic rules that hold good at present speeds may not apply to the planes of

SCIENCE NEWS LETTER

Vol. 45 MAY 27, 1944 No. 22

The weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C. North 2255. Edited by WATSON DAVIS.

Subscriptions—\$5.00 a year; two years, \$8.00; 15 cents a copy. Back numbers more than six months old, if still available, 25 cents.

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Entered as second class matter at the post-office at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices, Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and in the Engineering Index.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., Pennsylvania 6-5566; and 360 N. Michigan Ave., Chicago, STate 4489.

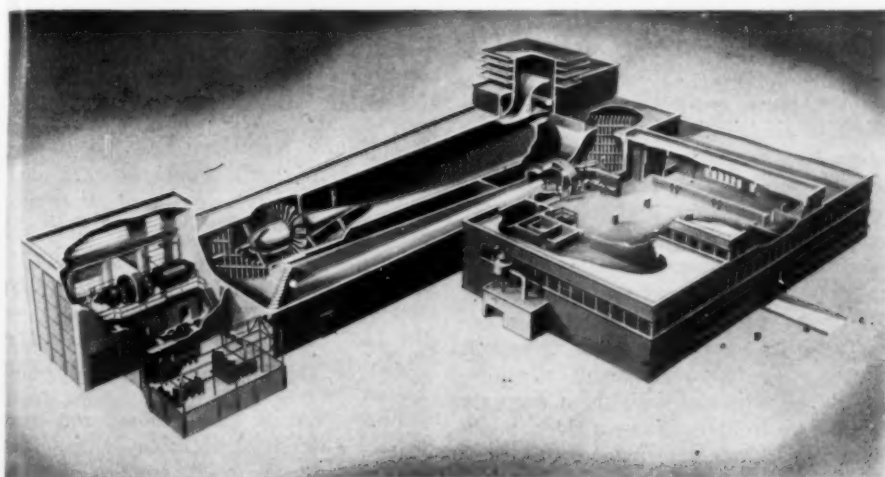
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PRODUCES HIGH SPEED WINDS—Gales approaching the speed of sound can be made in this new concrete wind tunnel, which has recently been put into operation at one of the Boeing Aircraft Company's laboratories, for testing the behavior of planes and their parts.

the future. It is believed that present-day aircraft at their moderate speeds affect the air ahead of them in such a way that the air can readily flow about their wings and bodies. The airplanes of

the future are expected to cruise at speeds from 600 to 800 miles an hour, and it is felt that a different type of airflow occurs at these higher speeds.

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PSYCHIATRY

Electric Sleep

New treatment used for schizophrenia, common mental disease, results in improvement for 26 out of 34 cases. Differs from shock treatment.

► A NEW TREATMENT for the mental disease, schizophrenia, was announced for the first time at the Philadelphia meeting of the American Psychiatric Association. The treatment is called *electronarcosis*, or *electric sleep*. It was described by Dr. George N. Thompson of Los Angeles. Working with him to develop the new treatment were Dr. Esther Bogen Tietz and Dr. A. Van Harreveld, of Los Angeles, and Dr. C. A. G. Wiersma, physicist of the California Institute of Technology at Pasadena.

Of the first 34 patients treated, 13 were termed Grade A recoveries, another 13 improved to the point of social adjustment though retaining some personality defects, four were improved but not markedly, and four failed to benefit. Of the four failures, it was subsequently found that three had had previous attacks of schizophrenia more than two years before the treatment. The Los

Angeles doctors believe the treatment is likely to succeed only in early cases who have been sick less than two years.

The treatment differs from electric shock treatment in that the electric current passed through the patient's brain is controlled to produce first a convulsion and then to keep the patient unconscious for seven minutes. Although electric sleep had been given to animals and even used as an anesthetic during operations on them, it was not possible to give it to human patients until a method was found for automatically compensating for the moderate changes in the resistance of the patient's circuit. Credit for devising a machine to do this goes to Dr. Wiersma.

Electronarcosis is safe and practical, the California scientists reported. They have given over one thousand such treatments without a death or significant complication. They consider it superior to electric shock, stating that the

latter gave 43% recoveries and improvements compared with 76% for electric sleep which is, they stated, approximately the same as with insulin shock treatment.

The treatment is almost as fearful to watch as the various shock treatments. In moving pictures Dr. Thompson showed, the patients' bodies were drawn up in violent convulsion as the current went through their brain. In 30 seconds the current was reduced and the patients were quieter although one kept twitching her feet and another made walking motions with her legs. During the sleep phase carbon dioxide and oxygen were given through a mask. The patients breathed as if gasping for air, perspired profusely, had flushed faces and kept their arms drawn up rigidly. Within a few minutes after the current was cut they regained consciousness and a half-hour later one patient was shown smiling and relaxed, apparently on her way to recovery from the sickness that had locked her mind up in the shadows and delusions of insanity.

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Aiding War-Bereaved

► HOW TO HELP the war-bereaved mothers, wives and other close relatives of the fighting men who will not come back was told by Dr. Erich Lindemann, of Massachusetts General Hospital, at the meeting.

These people who have what psychiatrists term grief reaction are likely to suffer symptoms of physical distress and mental and nervous abnormalities, he said, on the basis of experience with surviving relatives of the Coconut Grove fire victims.

Tightness in the throat, choking and shortness of breath, need for sighing, an empty feeling in the abdomen, lack of muscular power and intense subjective distress described as tension or mental pain are common to all sufferers from grief reaction. Lack of strength and exhaustion with the complaint, "everything I lift seems so heavy," was universal among those studied. The reaction may come immediately or be delayed. A slight sense of unreality, which may make the person fear insanity, a loss of warm feeling toward other people, a tendency to isolate herself from social activities, are other features of the condition.

Sometimes the grief reaction comes at the time of separation when the beloved one goes overseas, in anticipation of and as safeguard against the notice of death.

Many family disasters may result from this if, as in cases Dr. Lindemann cited, the soldier returns and complains his wife does not love him any longer and demands an immediate divorce.

In such cases the wife has done her "grief work" so effectively that she has emancipated herself from the departed husband and must readjust herself to his presence again.

The "grief work" which the bereaved must do consists in emancipating herself from bondage to the deceased and finding new patterns of rewarding inter-actions, forming new relationships and readjusting to an environment in which the deceased is missing. Comfort alone will not give enough help in this job of grief work. The severe cases, especially when the person develops great

and often frightening feeling of hostility, will need the help of a psychiatrist.

Since there are not enough psychiatrists to aid all the war-bereaved, ministers and social workers will have to acquire enough psychiatric knowledge to help the persons with normal grief reactions and to recognize the signs of more ominous trouble and refer such patients to psychiatrists for aid.

Persons who try to escape the discomfort of grief reaction by refusing to talk or think about their loss or by imagining the deceased is still with them are only storing up trouble for themselves. Much better, Dr. Lindemann says, is to express their sorrow and sense of loss and any guilt they feel and then work through to new feelings and patterns of conduct.

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MEDICINE

Preventing Rh Deaths

► HOPE that vitamin C, the anti-scurvy vitamin of orange and tomato juice, might save the babies and their mothers who die because of the Rh factor in the baby's blood appears in a report by Dr. Lyman Burnham, of Englewood, N. J., at the New York meeting of the New York State Medical Society.

The Rh factor was first discovered in the blood of the Rhesus monkey, hence its name Rhesus factor, or Rh for short. Harmless in itself, it causes tragedy when blood containing it is mixed with blood not containing it, just as the mixing in the veins of any incompatible bloods may cause death. (See SNL, Nov. 27, 1943 and April 1)

When the baby has inherited the Rh factor from its father and the mother has non-Rh blood, the blood of the two cannot mix safely. Sometimes, however, the two bloods do mix before the child's birth and then the baby is likely to be still-born or to die soon after birth, though the first-born child in such a situation may survive.

How the mother's and baby's blood mixes before birth has not been understood. Dr. Burnham suggests that it is due to deficiency of vitamin C in the mother which results in a break in the blood vessels of the developing infant. This would permit its Rh blood to escape into the mother's blood. Capillary blood vessels are known to be fragile and likely to break when there is a deficiency of vitamin C.

The mother might not be so deficient

in vitamin C as to show signs of scurvy and yet might not be getting enough for her own needs plus the amount needed to give strength to the developing capillary blood vessels of her unborn infant.

In support of his theory, Dr. Burnham points out that in normal pregnancy the amount of vitamin C in the blood plasma decreases almost to deficiency levels and is only about one-third that of non-pregnancy. Food habits and tastes of the mother, seasonal variations in the amount of the vitamin in foods, and nausea and vomiting may keep the mother from getting enough vitamin C.

In 12 out of 13 mothers of babies with erythroblastosis, the condition resulting from the mixing of the baby's Rh blood with the mother's non-Rh blood, Dr. Burnham found from their histories that the mothers had apparently not been getting enough vitamin C in their diets during pregnancy.

Even when the mothers are eating enough vitamin C foods, they may have some condition that prevents absorption of the vitamin or increases its elimination by the kidneys. The latter occurs in dogs in the presence of increased female sex hormone. Large amounts of this hormone are normally found in human mothers in early pregnancy.

If Dr. Burnham's theory proves correct, it may be possible to prevent Rh deaths of mothers and babies by vitamin C treatment if the father's blood shows the Rh factor.

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PSYCHIATRY

First Aid to Save Minds Taught in New Courses

► A NEW KIND of first aid course, designed to teach people how to save minds threatened by battle or other war strain, just as the Red Cross first aid courses teach them to save lives threatened by hemorrhage and physical injury, was announced by Dr. Daniel Blain, of the U. S. Public Health Service, at the Philadelphia meeting of the American Psychiatric Association.

Experience at a rest home for men of the Merchant Marine who have broken mentally and emotionally led Dr. Blain and his associates, Dr. Paul Hoch of New York and Dr. V. Gerard Ryan of New Orleans, to develop this course in psychological first aid. Actually, there are three such courses, one elementary, one for lay persons, and two more advanced ones for teachers, medical personnel and physicians without special knowledge of psychiatry.

The elementary course teaches what the nerves are, how they affect the body, how the body responds to feelings of hunger, fear, anger, and the like, and how to keep both mind and body healthy.

There is a set of directions for psychological first aid in mild cases of mental or emotional disturbance which the patient can apply to himself, and another set of directions for first aid in acute cases to be applied by someone else.

Merchant seamen trained in these courses will be able, Dr. Blain believes, to help themselves and their mates in time of stress. Since civilians are also subject to war strains, he thinks they, too, should take courses in psychological first aid to learn how to apply a splint, as it were, to a mind threatening to crack if not helped through the emergency before the psychiatrist can arrive to take over.

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PHYSIOLOGY

New Three-Minute Test For Night Vision Used

► A NEW three-minute test of night vision is being installed in Navy ships and training centers to help in checking the fitness of men for duty as night flyers, night lookouts and other work requiring "cat's eye" vision, it is announced by the American Optical Company.

Apparatus for the test is portable and consists of a luminous dial made of radioactive material sandwiched between two disks of glass. The dial has a very faint glow and this illumination can be cut down still further by the use of filters. It is necessary for the man taking the test to distinguish a letter T, showing up very faintly in silhouette against the glowing dial. He must tell the position of the letter as it is rotated by the examiner. The test is taken after the men have gotten their eyes used to darkness by wearing the Navy's special dark-adaptation goggles for 25 minutes

and then staying in a dark room for another five minutes.

The new test has resulted from several years' investigation by scientists of the Navy's Bureau of Medicine and Surgery. The idea of using the luminous dial was largely the result of recommendations by Dr. Walter R. Miles, of Yale University. Assistance in the research was also given by the Research Section of the Navy School of Aviation Medicine at Pensacola, Fla., and by the Research Laboratory at the New London, Conn., Submarine Base.

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PSYCHIATRY

Drug for War Neurosis

"Battle reaction" type of emotional breakdowns has been treated successfully with special nerve medicine. Scientists suggest its use as a prophylactic.

► **SUCCESS** with a new medical treatment for emotional breakdowns in fighting men following overwhelming battle experience is reported by Dr. Robert G. Heath and Dr. Florence Powdermaker, of the U. S. Public Health Service. (*Journal, American Medical Association, May 13*).

Ergotamine tartrate, a drug acting on the autonomic nervous system and which has been used in treatment of migraine, was the medicine used. Its use as a preventive is also suggested. Merchant seamen at the Gladstone, N. J., Rest Center, were the patients.

These men suffered from what the doctors call "battle reaction." They believe this is a more correct name than war neurosis for the breakdowns in men who previously were apparently normal emotionally and mentally, who faced previous action with only normal transient anxiety, and did not break down until subjected to an overwhelming battle experience.

Battle reaction, the scientists point out, also differs from neurosis in being primarily a physiological reaction. It is an exaggerated expression of fear of a real situation, whereas in neurosis the fear is real but the situation may not be really dangerous.

In the battle reaction cases, the scientists believe, the original threat to life results in an increased production of adrenalin. This is the body's normal reaction to danger. The extra adrenalin in the body causes the physical symptoms

of which the men complain, such as jitteriness, trembling, pounding heart, thumping in the head, empty feeling in the stomach and so on. The symptoms themselves increase the fear that started the reaction, more adrenalin is produced, and a cycle results.

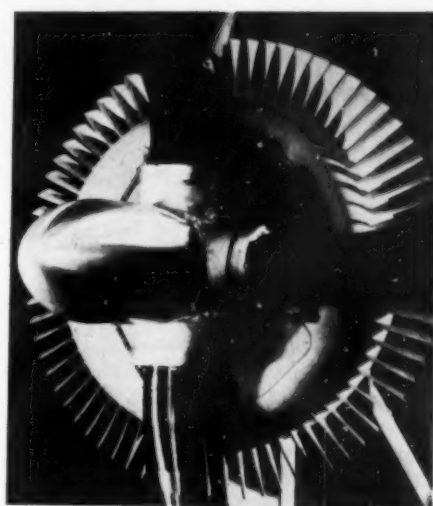
Believing the condition was fundamentally physiological, the doctors decided, instead of using sedatives, to try medicines that would act on the autonomic nervous system which influences the output of adrenalin in the body. Of several drugs tried, ergotamine tartrate proved the most effective.

In 20 men suffering from battle reaction relatively large doses of the drug every three hours for 10 days restored the men to health. They could see movies of battle scenes and talk over their own experiences without being upset. Some have already returned to sea duty. The drug was not effective when given to 20 psychoneurotic patients, many mildly colored by war experience.

No adverse effects of the drug have been noted, although it should not be given if the patient has signs of liver trouble, advanced hardening of the arteries or certain circulatory diseases. Because it did not interfere with mental coordination nor slow down mental processes, it might, the doctors suggest, be used as a prophylactic to lessen anxiety in combat.

They hope doctors working with similar types of patients will continue the trials of the drug.

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MAKES AIRPLANES FASTER —
This many-bladed, engine-cooling fan shown here mounted on the propeller shaft of a Cyclone engine has been developed by the Wright Aeronautical Corp. to improve the rate of climb of a plane up to 20 per cent and add as much as 10,000 pounds pay load, as well as to improve the cruising speed and altitude performance.

PSYCHIATRY

Insulin Shock Doubles Mental Illness Recoveries

► **RECOVERIES** of patients suffering with the mental disease, schizophrenia, are almost twice as numerous since insulin shock treatment has been introduced, it appears from figures which Dr. John H. Taylor, Jr., of the New Jersey State Hospital at Trenton, reported at the Philadelphia meeting of the American Psychiatric Association.

Almost two-thirds, 316 of the 568 schizophrenics treated at this hospital over a period of five years have shown definite signs of improvement, the records show.

Of patients admitted to the hospital in 1935, before insulin shock treatment was instituted, 35% returned to the community, a survey after two years showed. In the group admitted since the treatment was instituted in 1939, 60% improvement is recorded.

The results of the treatment, in the opinion of Dr. Taylor and associates, are directly related to the depth of the coma, or unconsciousness, produced by insulin and the severity of the convulsion produced with metrazol or electric shock treatment.

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NUTRITION

G.I. Joe Will Fight On New Combat Rations

► NO MORE hash for G. I. Joe. He will fight on ham and eggs and six other meat items when he gets the new "C" combat rations announced by the War Department.

The meat and vegetable hash has been discontinued and the Quartermaster Corps has expanded the original three meat units in the "C" ration to the following seven: meat and beans; meat and vegetable stew; meat and spaghetti; ham, eggs and potatoes; beef and noodles; meat and rice; and frankfurters and beans.

Variety is the object of the changes and it has been extended to the biscuit-beverage-confection units. A different type of biscuit is now provided for each meal, as well as a different beverage and confection.

One meal in each ration, a ration being three meals for one man for one day, includes one and one-half ounces of jam in a wide variety of flavors.

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BACTERIOLOGY

Germ-Killer in Cabbage May Have Value

► THE OLD NOTION that eating raw cabbage is good for what ails you gets some support from studies of a germ-killing substance in cabbage reported by Carl S. Pederson and Paul Fisher, of the New York Agricultural Experiment Station at Geneva, to the New York meeting of the Society of American Bacteriologists.

The substance has a bactericidal action toward gram-negative bacteria, such as the colon bacillus which inhabits the intestinal canal. Eating raw cabbage, therefore, may have "a beneficial effect in controlling the bacterial flora of the alimentary canal," the scientists state.

This cabbage germ-killer also shows some action against staphylococci, common germs in wounds. Apparently not as active against these as penicillin, its effect nevertheless leads the Geneva scientists to comment that the ancient Roman who three centuries before the Christian era advised the use of mashed cabbage in healing wounds may not have been so far wrong.

Of more immediate practical significance is the part this bactericidal substance in cabbage plays in the manufac-

ture of sauerkraut. It is apparently responsible for the disappearance, after the cabbage is shredded for fermentation, of the gram-negative bacteria that are found on the surface of cabbage leaves. The amount or activity of the antibacterial in cabbage juice varies. During certain seasons, off colors, odors and flavors in kraut are quite marked and have caused considerable losses. These objectionable changes may be due to the growth of bacteria which normally would be killed by the substance in cabbage juice.

Many other vegetables do not contain appreciable amounts of this germ-killing substance, which is different from that found in onions.

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INVENTION

Small Pile-Driver For Fence-Posts Invented

► AN INVENTION of potential value in country life is a fence-post driver, on which C. E. Jordan of Dawson, Iowa, and L. L. Jordan of Oskaloosa, Iowa, have received patent 2,348,820. It is built like a small pile-driver, and pounds the posts into the ground instead of necessitating the laborious job of digging postholes and setting and tamping in the posts. The device can be mounted on the rear of a farm truck, and is driven by means of a power take-off from the engine.

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CHEMISTRY

New Type Fuel Tablet Perfected by Army

► A NEW TYPE of fuel tablet has been developed by the Quartermaster Corps, U. S. Army, in collaboration with the Office of Scientific Research and Development. This fuel tablet will enable the soldier in the field to prepare a quick, hot meal from the "C" or "K" combat rations.

The new tablet is a synthetic compound, known as trioxane, colored to distinguish it as non-edible. It has several advantages over the previously developed square paraffin candle. The new fuel tablet heats faster, is lighter in weight, is more compact and has a less luminous flame. The tablet is flat, weighs a little more than one ounce, and will heat a can of English style stew ("C" ration) in six or seven minutes.

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IN SCIENCE

ENGINEERING

German Designer Perfects Power Plant For Planes

► IN THE HANDS of the Alien Property Custodian is patent 2,348,792, granted to the well-known German designer Claude Dornier of Friedrichshaven.

Herr Dornier, who has long been known as a bold, unconventional experimentalist, here undertakes to meet the problems imposed upon aircraft propelling plants by anticipated ultra-high speeds, in the neighborhood of the velocity of sound. Each nacelle, as he visions it, is to have two engines. The forward one will drive a more or less conventional "puller" propeller. The after engine will drive an ultra-high-speed fan or blower, which will pull air in through a series of slots and expel it through a second series of openings immediately to the rear. It appears to be an effort to obtain an effect like that of jet propulsion through mechanical means only.

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ENGINEERING

Water Injection Device Speeds up Navy Engines

► THE RECENTLY-developed water injection device for giving an extra burst of power to airplane engines is credited with having saved the lives of many fighter pilots.

This device recalls the improvised setups once used on aging automobiles, for injecting water into the cylinders on hot, dry days when the engine was rough and lost power.

The device is now being used in conjunction with the Pratt and Whitney 2,000-horsepower engines on Navy fighter planes.

At a flick of a switch, the pilot sends a tiny jet of water squirting into the fuel mixture. This has the same effect on the aircraft motor that injecting water into the cylinders has on the automobile motor. The heated engine runs more smoothly and produces a surge of considerably more power and speed, which is just the margin needed to save the pilot's life.

Science News Letter, May 27, 1944

CE FIELDS

BOTANY

Wild-Flower Fruiting Stages Are Interesting

See Front Cover

► WILD FLOWERS cease to interest most of us after the petals fall. Other flowers, moving up on the season's endless parade of bloom, attract our notice with new beauties, and we pass by the plants that were the center of our attention only a few days ago.

If we would only look casually today where we were fascinated last week we would often see things that would fascinate us still, in the growth and maturing of the wild plants' seed-pods and fruits. The pulpy little May-apples (not ripe until July!), the hair-triggered catapults of the wild touch-me-not, the reddening cluster-fruits of the Jack-in-the-pulpit, all have as great a claim on our interest as did the flowers that preceded them.

Sometimes it is just a matter of sheer elegance of form, as in the slender spire that contains the seeds of the bloodroot, photographed for the cover of this issue of the SCIENCE NEWS LETTER by Staff Photographer Fremont Davis.

Science News Letter, May 27, 1944

AERONAUTICS

"Flying Jeep" Carries 450 Pounds at 100 M.P.H.

► A DIMINUTIVE airplane that can whip around trees and zoom up and dive down like a high speed elevator is acting as the "eyes" of the British Army. It is approximately the "opposite number" of the American "grasshopper" plane.

It is the Auster IV, a new model of the all-steel Auster III which is known as "the maid of all flying work" of the British forces. Mobile as mercury, the Auster IV can take off after a run of 65 yards, can climb more than 1,000 feet in 60 seconds, and has a speed range between 40 and 130 miles an hour. It can cover 250 miles at one hop with a pilot and two passengers at 20 to 25 miles to a gallon of gasoline.

The new plane has a sound-proof cabin allowing normal conversation, controlled cabin heating, a plastic dome and side windows giving an unrestricted

view. Special flaps enable it to land at a very steep angle. It is equipped with foot brakes like an automobile and an inexperienced pilot could land it with the wheels locked.

As a war plane, the Auster IV is chiefly used for reconnaissance and artillery fire control. Frequently flying below tree level, its soldier pilot reports enemy gun positions by radio telephone, so that the range and aim of Allied guns can be constantly adjusted to moving targets.

Austers do not need airports. They operate from parade grounds, plowed fields and short stretches of roadway.

Its wide range of speed, coupled with the maneuverability of a mosquito, makes high-caliber guns and small arms almost useless against it.

Able to carry 450 pounds, it is sometimes used to transport food and medical supplies to outposts where no other plane could land.

The Auster IV costs only \$2,000 and may easily be converted to a post-war "family car of the air" for civilian use. The ordinary man will find it convenient to operate, since it requires only a very small field in which to land, and is simple to control in the sky.

Science News Letter, May 27, 1944

PSYCHIATRY

Cutting Down Salt in Diet Relieves Sleeplessness

► RELIEF from sleeplessness, or insomnia, and nervous tension was obtained in 11 out of 12 patients by cutting down the amount of salt in their diet, Dr. Michael M. Miller, of the U. S. Marine Hospital, Ellis Island, reported to the American Psychiatric Association.

He warned that unrestricted use of a low-salt diet might cause harm and that its use even by physicians in treating patients is still on an experimental basis.

The patients he treated were six hospitalized men suffering from nervous tension and insomnia and six men who had been morphine addicts. The latter showed marked degrees of insomnia, irritability, tension and anxiety states, with considerable mood swing, tending generally toward depression.

"The results were vastly encouraging," Dr. Miller reported.

The studies were carried on with the collaboration of Dr. B. L. Pacella and Dr. Irville H. Mackinnon of the Psychiatric Institute of New York.

Science News Letter, May 27, 1944

CHEMISTRY

New Process Makes Bleach Available to Industry

► CHLORINE dioxide, a bleach known to be two and one-half times as powerful as chlorine, is now available for industrial use by means of a process developed at the Mathieson Alkali Works and reported by E. R. Woodward at the Cleveland meeting of the American Institute of Chemical Engineers.

Up to the present time, the industrial use of chlorine dioxide has been impracticable because it does not keep. The new process, described by Mr. Woodward, overcomes the difficulty by providing a simple process by which the user can prepare the strong bleach in any quantity right at his plant, from chlorine and sodium chlorite.

Chlorine dioxide has already proved to be of specific value in the food, starch, soap, paper, and textile industries.

Science News Letter, May 27, 1944

CHEMISTRY

Faster Sugar Production Promised by Filter Process

► SUGAR to refill that depleted sugar-bowl can be produced more rapidly and with less waste in the process, if the promise of a newly-patented continuous-filter method is fulfilled.

C. J. Peterson of Salt Lake City, recipient of U. S. patent 2,348,846, explains in his preamble the problem which he undertook to solve. Beet or cane juice, he states, is clarified by mixing it with lime, to capture and hold undesirable solid particles. This has to be removed by filtering or settling, or a combination of both.

Filtering through the conventional filter press is a slow job, loses a good deal of sugar in the filter itself, and involves frequent stoppages for changing filters, with attendant high labor costs. Settling before filtering slows down the job still more, and also permits undesirable chemical changes to take place.

His process escapes the dilemma by putting the limed juice immediately through a new kind of filter: a rotating drum that carries the filter, so constructed that part of the filter is constantly being automatically cleansed while the rest is straining the juice. This eliminates stoppages, reduces labor costs, and save a great deal of time.

Rights in the patent are assigned to the Eimco Corporation.

Science News Letter, May 27, 1944

ASTRONOMY

Summer Stars Appear

Scorpion shines low in the southeast in June evening skies. Summer begins for northern hemisphere on June 21 at 9:03 a. m. EWT.

By JAMES STOKLEY

► AS SUMMER comes with the month of June, and on warm evenings we watch the stars make their appearance, we can see one constellation toward the south that seems characteristic of this season, just as Orion, the great warrior, is of winter. Orion is gone, but his traditional enemy (according to mythology), the scorpion, has come into view. This group—Scorpius, it is called—is low in the southeast, and is indicated on the accompanying maps. On these we have the appearance of the heavens about 11:00 p. m., local war time, at the first of June, and an hour earlier in the middle of the month.

Only two planets remain in the evening sky. Still the brightest is Jupiter, in Leo, the lion, which is toward the west, and is marked by the hook-shaped group called the sickle, with first magnitude Regulus at the end of the handle. Mars is in the next-door constellation of Cancer, the crab, and is approaching Jupiter, which it will pass on July 5. At present, because of its distance from earth, Mars is quite faint, of magnitude 1.9, which places it among objects of the second magnitude. Jupiter, on the other hand, is of magnitude minus 1.4, which makes it about 21 times as brilliant as Mars.

Out of Sight

Venus, which was shining so brightly in the early morning sky at the beginning of the year, is now almost directly beyond the sun, a position which it reaches on June 26. After that, it becomes an evening star, remaining in the west after sunset, though it will be some weeks before we begin to see it.

For a similar reason Saturn has also gone from sight, and it will be directly beyond the sun on June 21. Mercury likewise is too nearly in the sun's direction to be visible during the month.

Coming to our stars of the month, we have several other conspicuous constellations in addition to Scorpius, in which shines the bright—and red—An-

tares. High in the south is Bootes, the bear driver, with first magnitude Arcturus. A little lower is Virgo, in which Spica shines. Regulus, in Leo, is in the west, as already mentioned, and very low in the northwest are Pollux, in Gemini, the twins, and Capella, in Auriga, the charioteer. Although these are shown on the maps, they are so low that they are not conspicuous.

To the northeast, however, in a position where they are coming into view in the evening sky, is the trio of Lyra, the lyre; Cygnus, the swan; and Aquila, the eagle. Each of these contains a first-magnitude star; namely Vega, Deneb and Altair. The large triangle which these orbs make in the sky is a good one to know, to help you to find your way among the stars.

Summer Arrives

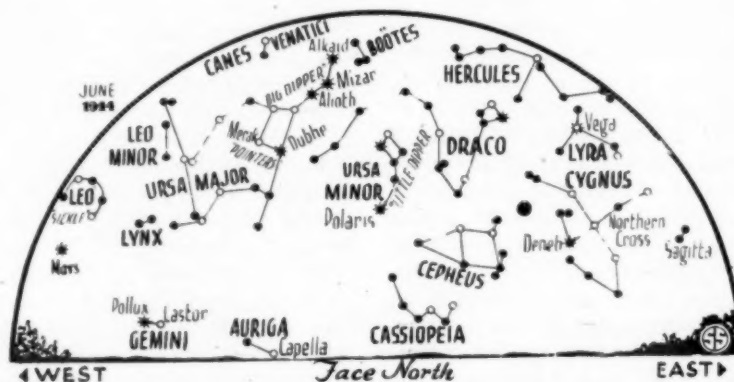
With June also comes the beginning of the northern hemisphere summer, for this starts with the summer solstice, the time when the sun is farthest north of the equator. This year it occurs on June 21 at 9:03 a. m., EWT. Then the sun, for us in the northern hemisphere, reaches its highest noonday position. Its rays fall on the ground most directly, and are more concentrated. This, and the fact that it is above the horizon longer than at any other time of year, is responsible for the greater heating of this part of the earth. It takes a while, however, for the earth to become heated, and therefore our highest temperatures

come several weeks after the solstice, when we are actually getting the most heat from the sun. Similarly, it takes time to cool, and the lowest winter temperatures come in January, some time after the winter solstice just before Christmas, when the radiation from the sun is least.

South of the equator, the sun is now low in the north at noon, and this is, for the people there, the beginning of winter. On the other hand, December is the start of their summer, a curious fact which has become familiar to many of us whose relatives and friends are serving "down under" with the armed forces.

Times Agree

Speaking of the sun, this month also brings one of the four dates during the year when the sun is "on time," that is, when sundial time and "clock" time agree. Because of the fact that the path of the earth around the sun is not a circle, but an ellipse, and also because the axis of the earth is not at right angles to the plane in which it revolves around the sun, the length of the day as measured from the sun varies over a range of nearly a minute during the year. This means that a clock which kept sun time would have to run faster at certain times of year and slower at others. As it would be inconvenient to have such clocks, we use "mean" time, which is constant through the year, but maintains a sort of average of sundial time. In February the sun is behind the clock by nearly 15 minutes, while around election day, in November, it is about 17 minutes ahead. On June 1, the sun is 2 minutes 24 seconds early, while at the



end of the month it is 3 minutes 35 seconds late. On June 14, however, it crosses the meridian just at noon by clocks set to local time.

This, however, is not the whole story, for our clocks are not set to local mean time. Years ago they were, but that meant that whenever you moved east or west you had different kinds of time, and had to change your watch by some odd number of minutes. To obviate this, which was especially troublesome to the railroads, standard time was introduced, and the entire eastern part of the country, for example, used eastern standard time, which is the local mean time for places which have longitude 75° West, of which Philadelphia is an example. Along the 75th meridian, therefore, local mean time and standard time were the same. The same was true along the 90th meridian, the center of the Central time zone, along the 105th meridian, from which Mountain time was taken, and in the Pacific Time zone, along the 120th meridian. Therefore, along these meridians on June 14, you can tell standard time by looking at the sundial, and if you add an hour to that, you will have your local kind of War Time.

Celestial Time Table for June

June	EWI	
6	2:58 p. m.	Full moon.
11	8:00 p. m.	Moon nearest; distance 229,400 miles.
13	11:56 a. m.	Moon in last quarter.
20	1:00 p. m.	New moon.
21	9:03 a. m.	Summer solstice, summer commences.
24	1:24 p. m.	Moon passes Mars.
	10:11 p. m.	Moon passes Jupiter.
26	8:00 p. m.	Moon farthest; distance 251,300 miles.
28	1:27 p. m.	Moon in first quarter.

Subtract one hour for CWT, two hours for MWT, and three for PWT.

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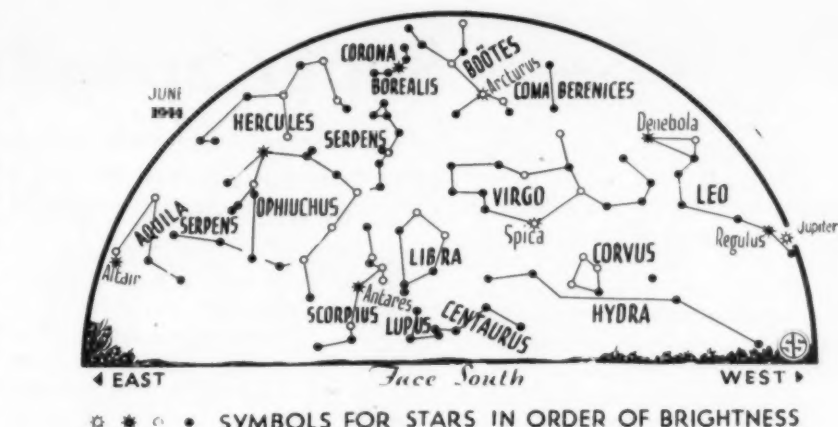
PHYSIOLOGY

New Explanation Given For Pain in Aviators' Bends

► A NEW explanation of the cause of pain in aviators' bends was presented by Dr. Joseph P. Webb and associates of the University of Cincinnati College of Medicine at the Atlantic City, N. J., meeting of the American Society for Clinical Investigation.

These scientists differ from the widely held view that the painful bends feature of decompression sickness which attacks high altitude flyers is due to stoppage of circulation by nitrogen bubbles forming in the blood vessels.

The bubbles, the Cincinnati scientists believe, are formed in the tissues about the joints, not in the joint space and not within the blood vessels.



Applying pressure to a painful area, for example, inflating a blood-pressure cuff around the knee, relieves the pain even when pressures great enough to obliterate the blood flow are used, they found. If stopping the circulation were causing the pain, this would be expected to make it worse.

The specific pattern of bends pain may be reproduced exactly in most cases by reexposing the person within a short interval; up to six hours, to the high altitude condition that brought on the trouble. This indicates, the scientists point out, that the circulation has not removed

the bubble. If the bubble causing the pain had been within the blood vessels it would have been either redissolved or carried off.

The skin and nervous system features of decompression sickness, apart from the painful bends, are due to spasm of the blood vessels rather than stoppage.

Associated with Dr. Webb in these studies were Dr. Joseph P. Webb, Dr. G. L. Engel, Dr. John Romano, Dr. H. W. Ryder, Dr. Charles D. Stevens, Dr. M. A. Blankenhorn and Dr. Eugene B. Ferris, Jr.

Science News Letter, May 27, 1944

"Gamow has done it again!"

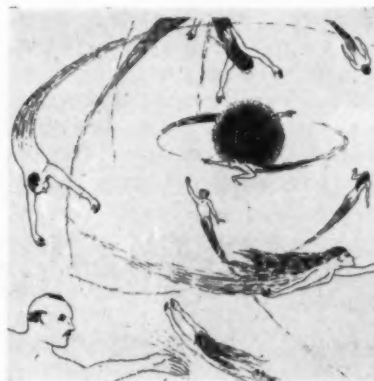
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Do You Know?

Sugar is the hub of Cuban economy.

Panama has recently established a factory to produce *wax matches*.

Cull potatoes are no longer an agricultural outcast; they now have wide usage in the manufacture of industrial alcohol.

As a substitute for war-scarce tin, *beryllium* forms an alloy with copper that can take the place of bronze.

Food is just as hot whether it is *boiling* fast or slowly, and fast-boiling uses more fuel.

Inclusion of *hydrogen* in amounts as small as one two-thousandth of 1% can make steel brittle.

The male *halibut* rarely grows to a weight of more than 40 pounds, but females have been found weighing ten times as much.

Substitutes are being sought for war-time costly *mercury salts* used in cabbage maggot control.

Carbolic acid, called phenol by chemists, was at one time used principally as a germicide; now its primary use is in making plastics, dyes and explosives.

A new type of spray gun used by the armed forces contains an insecticide and a liquid mixture that forms a "*cold smoke*" as it escapes through a special nozzle and does not settle for hours.

Pollution is thought to be the chief cause for the decline of shad in the Delaware River which prior to 1900 produced 15,000,000 pounds annually, but now yields from 100,000 to 150,000 pounds.

The discarded pulp of *henequen* leaves, from which the fiber for twine has been removed, is so acid that parts of de-pulping machines must be made of copper, bronze or brass to resist the acid.

Zirconium sulfate is used in a new white mineral tanning agent to obtain white leather; zirconium is a metallic element of the titanium group of chemical elements whose silicate, known as zircon, is valued as a jewel.

PHYSICS

Super Speeds Questioned

Expert believes airplanes may some day travel at speed of sound, but they have not yet reached it. Lift coefficient will decrease with higher speeds.

► AIRPLANES may some day travel at the speed of sound. They will do it first in diving at high altitudes; but it is doubtful if this speed has already been made, in spite of previous news that one or another pilot has reached such high velocity.

This opinion was expressed by Dr. Theodore von Karman, director of the Guggenheim Aeronautical Laboratory, California Institute of Technology, in the Joseph Henry lecture before the Philosophical Society of Washington.

"Obviously," he said, "it is an interesting question whether there are any intrinsic limits for flight velocity. Many people will ask you 'shall we ever fly faster than sound?' I do not believe that at the present time this question can be answered by a straight yes or no." At sea level this would require a flight speed of 780 miles per hour, at high altitudes somewhat less.

A discovery of fundamental importance in the development of the steam and gas turbine was referred to by Dr. von Karman. In the nineteenth century, he said, many engineers believed that it is impossible to produce higher efflux or outflow velocities than the velocity of sound. Then the Swedish engineer, De Laval, demonstrated that by a so-called convergent-divergent nozzle much larger velocities can be reached.

As to the motion of solid bodies in a medium faster than sound, the science of ballistics offers interesting facts, the speaker stated, which have bearing on aeronautical problems too. Airplanes will go to the velocity of sound probably

in diving at high altitude, he continued. "The check of possibilities shows that previous news that one or another pilot reached the velocity of sound are probably erroneous."

In general, Dr. von Karman declared, it can be said that whereas, for example, it is impossible to design vehicles which would leave the gravity field of the earth unless new fabulous fuels are discovered, the velocity of sound should not be a "stonewall of despair" for faster motion.

The amount of lift produced by an airplane wing, generally speaking, is determined by the difference of pressure between the lower and upper surfaces, he explained. In the case of a cambered wing the air is accelerated along the upper surface to a greater extent than at the lower surface, and therefore, at the upper surface a larger suction results. This suction furnishes the lift of the wing. The camber is the curvature of the centerline of the wing section.

"Now it is evident that because of the larger camber of the upper surface the velocity of sound will be reached sooner in the upper than in the lower . . . After that even if we further increase the flight velocity of the wing the magnitude of the suction at the upper surface will cease to increase, the lift practically becomes independent of the velocity of flight." The ratio between the lift per unit area and the dynamic pressure of the corresponding flight velocity is the lift coefficient. "Hence, if the lift remains constant with increasing flight velocity, the lift coefficient must rapidly decrease."

Science News Letter, May 27, 1944

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CHEMISTRY

Lysozyme and Avidin May Be Related Substances

► THE SUGGESTION that an antibacterial substance and an anti-vitamin substance obtained from egg white may be related or, perhaps, identical, is made in reports by Dr. Karl Meyer, of the College of Physicians and Surgeons, Columbia University, and William L. Laurence, science writer for the *New York Times* (*Science*, May 12).

The two substances are lysozyme, which Dr. Alexander Fleming, of London, England, discoverer of penicillin, found would dissolve, or lyse, certain microorganisms, and avidin, a chemical that combines with the vitamin, biotin, and thus deprives microorganisms of the vitamin.

Biotin increases the activity of lysozyme, Dr. Meyer reports, adding that "the data reported here cannot be explained with certainty at the present time."

Tests which "showed that the avidin activity in each avidin concentrate closely paralleled its lysozyme activity" are reported by Mr. Laurence, who suggested the study to Dr. Meyer and who also points out that earlier studies have brought to light a number of common chemical and physical characteristics of avidin and egg white lysozyme.

Science News Letter, May 27, 1944

CHEMISTRY

Isoprene from Petroleum Saves Valuable Turpentine

► A METHOD of producing isoprene, basic building block of natural rubber and important ingredient of synthetic rubber, was described at the semi-annual meeting of the American Institute of Chemical Engineers, held at Cleveland, by J. M. Mavity and E. E. Zetterholm of the Universal Oil Products Company of Chicago.

Heretofore the isoprene needed for commercial use has been derived from turpentine, but when the new process is put into action the oil wells of the nation will supplant the pine trees, saving valuable turpentine for other vital uses.

By the new process isoprene will be formed from readily available petroleum hydrocarbons by chemical methods, in one simple operation.

The authors stated that isoprene will play a far more important part in the synthetic rubber field in the future.

Science News Letter, May 27, 1944



An Owl Howled

► THE CLASSIC anecdote, about the Cockney who was reassured that a weird sound he heard in the dark woods was "only an owl," and demanded to be informed "Wot in 'Eaven's nyme was 'owlin'?" may not be a joke on the Cockney after all. He may have had an innate feel for the onomatopoeic link between owls and howls—despite the lack of likelihood of his recognition of it under such terminology. We think of owls as hooting birds; it is not at all improbable that our grandsires thought of them as howling fowl.

We get an equally close approximation between the two words in modern High German: howl is *Heule*, and owl is *Eule*. And a strange echo comes in with that somewhat "high falutin'" English word that means a howl: ululation.

However, whether the fowl we call an owl was named for its howl or not, there can be little question of the origin of many American and English bird names from the birds' own calls: chickadee, peewee (or phoebe if you insist), whippoorwill, bobwhite, bobolink, chewink, cuckoo, pipit, tomtit. There are those, too, who feel that the name "dove" was suggested by the birds' subdued cooing; and there is no doubt at all of the origin of the Latin *turtur* and its close English derivative "turtle."

It may well be that some farmer in ancient Latium, centuries ago, listening to the loud honking of a big bird in his barnyard, decided that the right name for the creature was *anser*—there really is something suggestive about the sound. It survives in German *Gans*, but is rather attenuated in our "goose."

Some stretch of the imagination may be required to hear a cow say "cow"; but a Scot will call her a "coo," and

that gets pretty close to the conventional "moo." And anybody who has had even the most distant acquaintance with a bull has heard him repeat his own name over and over. Similarly, it is difficult to imagine any dog barking sharply enough to say "dog"—but any hound giving tongue bays "haound" again and again. The Greeks had a name for him, too: *kyon*, which is supposed to have been pronounced more like "kü-on." At any rate, it sounds like good dog-Greek.

Of course, name-games like these are not to be taken too seriously, unless you are a well-trained student of the history of languages. But if you aren't playing "for keeps," they can be a good deal of fun.

Science News Letter, May 27, 1944

INVENTION

New Process For Heating Canned Foods Patented

► STERILIZATION-heating of canned foods as a continuously-flowing process, instead of the batch pressure-steaming method now generally used, has been patented. The new process, developed by H. L. Smith, Jr., and W. E. Conley, Jr., of Richmond, Va., consists essentially in carrying the cans on a conveyor belt through a bath of heating fluid kept up to the necessary temperature by steam coils, then through a low-temperature bath to cool them as quickly as possible. At the same time, the cylindrical cans are kept spinning on their long axes, which circulates their contents and thus facilitates heat exchange.

Science News Letter, May 27, 1944

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What 4,400 Science Clubs Do



An increase of 500% in the number of clubs affiliated with Science Clubs of America since 1941 is an indication of the eagerness of youth to do important war jobs and at the same time prepare for careers in peacetime.

Today more than 4,400 science clubs are working long hours in their laboratories and workshops to learn science and apply it wherever possible to real service on the home front. These clubs are composed of approximately 100,000 boys and girls—most of them of junior and senior high school age. Any interested group may join Science Clubs of America without cost. Write to 1719 N St., N.W., Washington 6, D. C.

Well aware of the shortage of trained scientists and skilled technicians, these 10- to 18-year-olds are studying their favorite sciences to prepare themselves as professional scientists or as accomplished amateurs but they are applying their knowledge now to give aid to the war effort.

Like other war-working civilians the members of Science Clubs of America buy war stamps and bonds and help in campaigns to sell them; they collect rubber, metal, paper, fats and other salvage. They volunteer for civilian defense services; take courses in home nursing and first aid; donate blood; build model planes for identification study; conserve food and other war-needed commodities.

SCA members have learned to practice good nutritional habits and are doing what they can to instruct their communities in this war necessity. Although their regular class work is made heavier with pre-induction courses in science and mathematics, they are doing their share to overcome the manpower shortage by lending their boy- and girl-power to filling war jobs during their out-of-school hours.

Many of them assist their rationing boards, serve as nurse's aides, raise Victory gardens, serve as volunteer farm helpers, care for children of war workers, prepare surgical dressings, entertain convalescent service men; and they have had to learn to repair and even make much of their laboratory equipment.

But members of Science Clubs of America are not content to contribute just what is expected of them as civilians. They have discovered a wide variety of war services which they have undertaken as distinct and ingenious means of serving their country.

News of their work comes in regularly to SCA headquarters. Each club passes along their information so other clubs can benefit from their ideas. It is traditional among scientists to share all their findings with one another and these clubs function in the same manner.

Only a few club reports can be given here but enough to show the sincere and effective work being done voluntarily by members of Science Clubs of America from coast to coast.

BIRMINGHAM, ALA.—Last year, the Electrons, a club of 25 members, in Ensley High School, finger printed about 75% of the students in their school. They are trying this year to get the finger prints of 100% of their fellow students. The club has won chemistry project awards for three years at the state meetings of the Alabama Junior Academy of Science. Their sponsor is Miss Kathryn Boehmer, chemistry teacher.

LEPANTO, ARK.—W. F. White, principal of the Stillman Junior High School, is sponsor of the Stillman Science Club which now has a membership of 4 girls. These 15- to 18-year-olds have been stirred by two local situations. These have caused them to study extensively the extermination of rats and the fighting of red spiders in cotton fields.

CHICAGO, ILL.—The Science Observers are 26 girls of St. Louis Academy. Their school is in the midst of a large industrial section and they find enough science in their own neighborhood to absorb all their time. They visit industries manufacturing nationally known paint, soap, canned goods, medical supplies and cosmetics. They have specialists from these industries visit their club and lecture to them on the science of particular procedures. They pass this information on dramatically to their student body by presenting skits and plays which they write and act themselves. Their sponsor is Sister St. Mary of Mercy who is a chemistry and biology teacher.

IOWA CITY, IA.—Alvin F. Wals, instructor in University High School, is sponsor of the U-High Science Club of 7 boys. Their interests include botany, physics, chemistry and zoology. They keep displays in these fields in the school display case, as well as in their own, just outside their science rooms. The members keep written records of their readings in current science magazines and compare notes on these once each week to exchange information. The school has a soil-testing outfit and the boys are offering their services to any Victory gardeners who wish to have soil tests made.

WEBSTER GROVES, MO.—The five boys in this science club are experimenting with rockets. To date their most successful rocket went 214 feet. It was made of $\frac{1}{2}$ x 5 inch brass tubing, filled with powdered zinc-sulfur mixture. Their sponsor is Randall Koenig.

ANDOVER, MASS.—The two science clubs in Phillips Academy have never been formally organized and they function well without any officers. There are no club meetings held since all the time is spent in laboratory work. The members choose their own subjects and time for work. They are now working individually on such projects as: electron electroscope, grinding astronomical mirror, growing crystals, tests on water-hardness, water distillation for laboratory, recovering lab by-products, mechanics of auto engines, classification of mineral collections, spectroscopic studies, preparation of compounds from ores, preparation of cements, glass blowing, simple electrolysis and softening water by ion-absorbing resins.

DIXON, N. M.—Forest preservation and study and prevention of soil erosion and floods are the projects the Junior Omicrons of St. Joseph High School are working on under the sponsorship of Sister M. Dorothy, science teacher. This club has successfully bartered with a West Coast club which sent them a valuable collection of marine plants and animals.

SOMERVILLE, N. J.—The Positrons of Somerville High School, have a club membership of 12 boys and 11 girls. They are sponsored by L. L. Moore, chemistry instructor. They have had discussions and demonstrations of war gases and their experiments have carried them far enough to prepare test papers to be used in demonstrations for civilian defense in their state. In chemistry they have prepared synthetic products such as cosmetics, flavoring extracts, drugs and dyes. They follow the most recent developments in chemistry by discussing with one another what they have learned from scientific magazines, the radio and newspapers.

NEW MILFORD, CONN.—The Photography Club of New Milford High School is 4 years old and this year has 20 boys as members. They make pinhole cameras, take a school movie yearly which is shown at the High School commencement and send their print exhibition on a tour. They make Christmas cards, 35 mm filmstrips, visit local professionals' darkrooms and hold regular lectures on photography. With all this activity they have added a new department to their club this year concerned with aviation. The boys build their own flying models and are planning a flight contest this spring.

WILLIAMSBURG, VA.—The George Washington Carver Club of Bruton Heights School is intensely interested in farming and agricultural problems in their own community. The 50 members have initiated a "Food Fights for Freedom" campaign which will be the keynote of their work and influence in the local area. Busy with poultry raising, plowing for Victory gardens, meat and poultry canning, they plan to inform the community of the results of their experiments and work. Mrs. Olive Hill Scott is their sponsor.

ROSEBURG, ORE.—The Faraday Club of Roseburg Senior High School is 15 years old and has 14 members who are studying mineralogy, radio, microscopy and hydroponics. Each week the club puts on a movie at the noon hour to bring entertainment to the student body and cash income to the club. This year the members will put on their annual assembly program and will also stage a radio broadcast.

CURTIS, NEBR.—The N.S.A. Science Club is 5 years old and now has 25 members. E. A. Hoddapp, instructor in physical sciences in the Nebraska School of Agriculture, is the sponsor. The members are interested in first aid, foods, dietetics, disease prevention and health and sanitation. They study soil fertility, improvement of crop varieties and soil analysis. They watch carefully for reports of new discoveries and inventions.

SAN ANTONIO, FLA.—The Vitamin V Club under the sponsorship of Sister Ruth, science teacher, concentrates on the study of biology with special attention on eating habits, food raising, and food preparation. The 30 girl members are students of Holy Name Academy. They have their own Victory gardens and work together on such problems as weed eradication, soil-preparation and care, and the canning of their produce.

COTTONWOOD, IDA.—The Lively Laboratory Legion is 7 years old, has 24 members and is sponsored by Sister M. Alfreda, head of the science department of St. Gertrude's Academy. As a climax to their work in physics and chemistry, they hold assembly programs to which grade school children are invited. They hold a Science Fair annually to which the parents are invited. They contribute their best models, collections and experiments to the school museum.

• First Glances at New Books •

► "THE USES of the useless" is a subtitle that might very well be appended to H. Albert Hochbaum's *THE CANVASBACK ON A PRAIRIE MARSH* (*American Wildlife Institute*, \$3). For to many, perhaps most, people the word "marsh" means merely a lot of flat mud and sloppy water filled with uninteresting weeds, to be ditched, tiled and plowed as soon as possible. The author, centering his story around one species of duck and working outward into the whole ecology of the place, shows how a typical Canadian marsh can be made the source of scientific knowledge, legitimate sport and esthetic enjoyment. This book should be required reading for legislators and land-use planners.

Science News Letter, May 27, 1944

► LONG AWAITED by botanists, Volume II of Leroy Abrams' *ILLUSTRATED FLORA OF THE PACIFIC STATES* (*Stanford Univ. Press*, \$7.50) will be greeted with enthusiasm because of its solid usefulness in taxonomic work. The present volume carries through from the buckwheat family to the legumes: 35 plant families in all. Two more volumes are still in preparation.

Science News Letter, May 27, 1944

► TARAWA: Toughest Battle in Marine Corps History, by S/Sgt. Dick Hannah, Marine Corps Combat Correspondent (*Duell, Sloan and Pearce*, \$1) tells vividly, in words and pictures, the story of the big fight on the little island, where the Leathernecks proved all over again that they could take it—and then dish it out again, hotter than they got it.

Science News Letter, May 27, 1944

► FARMERS nowadays are as a rule not "men of one book," but if they were, the *MODERN FARMERS' CYCLOPEDIA OF AGRICULTURE*, by Earley Vernon Wilcox (*Orange, Judd*, \$4.50), might well make a strong bid to be that book, for it does manage to pack essential information about all important crops, fertilizers, farm operations, into just under 500 pages of forthrightly written, well-illustrated text.

Science News Letter, May 27, 1944

► WILLY LEY is not only an excellent master of written words and an experienced popularizer of sometimes difficult technical subjects; he has himself conducted research on rockets. So when he

appends to the title of his new book, *ROCKETS* (*Viking*, \$3), the subtitle, "The Future of Travel Beyond the Stratosphere," it may safely be assumed that he is tempering his dreams, however, fiery, with the solid facts of physics and the cold restraint of mathematics.

Science News Letter, May 27, 1944

► THE GERMAN SOLDIER (*Infantry Jour.*, 25c) is a pocket-size, paper-covered book, half its pages filled with pictures of German soldiers from German sources, the other half with text in good, colloquial G.I. language, telling what kind of a guy Jerry is and what can be done about him. An excellent book for indoctrination purposes.

Science News Letter, May 27, 1944

► QUESTION-AND-ANSWER has always been a highly successful method of instruction. It is employed to the full in what might well be called the Longer Catechism of Gardening, a fat volume (nearly 1,500 pages) crammed with questions that plague gardeners, and their answers by 15 experienced gardeners, under the editorship of F. F. Rockwell, titled *10,000 GARDEN QUESTIONS* (*Doubleday Doran*, \$3.95).

Science News Letter, May 27, 1944

► POST-WAR PROBLEMS are given primary attention in the 1943 *AMERICAN PLANNING AND CIVIC ANNUAL* (*American Planning and Civic Assoc.*, \$3), edited by Harlean James, just off the press. Spokesmen for private industry as well as federal, state and municipal organizations present problems, point out possible roads towards solutions.

Science News Letter, May 27, 1944

Just Off the Press

THE ABORIGINAL CULTURE OF THE CAHITA INDIANS—Ralph L. Beals—*Univ. of Calif. Press*, 93 p., illus., paper, \$1.25.

AMERICA UNLIMITED—Eric Johnston—*Doubleday, Doran*, 254 p., \$2.50 The aggressive young president of the U. S. Chamber of Commerce sizes up the contemporary scene, with a wealth of pithy phrases, and forcefully presents his case for what he calls "a people's capitalism."

AN ARCHEOLOGICAL SURVEY OF VENEZUELA—Cornelius Osgood and George D. Howard, EXCAVATIONS AT RONQUIN, VENEZUELA—George D. Howard, EXCAVATIONS AT TOCORON, VENEZUELA—Cornelius Osgood—*Yale Univ. Press*, 354 p., illus., paper, \$3.50, Yale Univ. Publications in Anthropology, Nos. 27, 28 and 29.

COOPERATION FOR WHAT? United States and British Commonwealth—F. R. Scott—*Am. Council Inst. of Pacific Relations*, 64 p., illus., paper, 25c., I.P.R. Pamphlets No. 11.

FIRST PRINCIPLES OF RADIO—Thomas J. W. O'Neil, ed. by William L. Schaaf—*Oxford Book Co.*, 250 p., illus., paper, 60c.

HOW ZINC SAVES STEEL FROM RUSTING—N. J. Zinc Company, 24 p., illus., paper, free.

JOINT STATEMENT ON SOCIAL SECURITY—*Natl. Planning Assoc.*, 36 p., paper, 25c., Planning Pamphlets No. 33.

A LIST OF MARINE BACTERIA INCLUDING DESCRIPTIONS OF SIXTY NEW SPECIES—Claude E. Zobell and Harvey C. Upham—*Univ. of Calif. Press*, 53 p., paper, 50c., Bulletin of Scripps Institution of Oceanography, Vol. 5, No. 2.

THE MAYO CLINIC—Lucy Wilder—*Harcourt, Brace*, 93 p., illus., \$1.75.

MEET MR. GRIZZLY—Montague Stevens—*Univ. of New Mexico Press*, 281 p., illus., \$3.50. Reminiscences of an old-time hunter, about days when the West had more wilderness areas with more big-game animals in them.

NAVAL LEADERSHIP AND THE AMERICAN BLUEJACKET—Arthur A. Ageton—*Whitlessey House*, 91 p., illus., \$1.25. Helpful advice on the handling of men, for junior officers in the Navy, persuasively presented.

ON LIVING IN A REVOLUTION—Julian Huxley—*Harper*, 242 p., \$2.50. A collection of essays.

A PRACTICAL COURSE IN HOROLOGY—Harold C. Kelly—*Manual Arts Press*, 102 p., illus., \$2.75.

PRACTICAL MALARIA CONTROL, A Handbook for Field Workers—Carl E. M. Gunther—*Philosophical Library*, 91 p., \$2.50.

SOMETHING NEW ABOUT HEALTH AND HEALING—P. F. Van Den Daele—*Christopher*, 288 p., \$3.

THE STRUCTURAL CHARACTERISTICS AND NUCLEAR PARASITES OF SOME SPECIES OF TRICHONYMPHA IN TERMITES—Harold Kirby—*Univ. of Calif. Press*, 97 p., illus., paper, \$1.25, Univ. of California Publication in Zoology, Vol. 49, No. 8.

SUMERIAN MYTHOLOGY, A Study of Spiritual and Literary Achievement in the Third Millennium B. C.—S. N. Kramer—*Am. Philosophical Society*, 125 p., illus., \$2, Memoirs Vol. 21.

SYSTEMATIC REVIEW OF THE CHIPMUNKS (GENUS EUTAMIAS) OF CALIFORNIA—David H. Johnson—*Univ. of Calif. Press*, 85 p., illus., paper, \$1, Univ. of California Publication in Zoology, Vol. 48, No. 2.

TALK ABOUT WILDLIFE for Hunters, Fishermen and Nature Lovers—Ross O. Stevens—*Bynum Printing Co.*, 229 p., illus., paper, \$1.75; cloth, \$2.50.

WHAT ABOUT OUR JAPANESE-AMERICANS?—Carey McWilliams—*Am. Council, Inst. of Pacific Relations*, 31 p., illus., paper, 10c., Public Affairs Pamphlet, No. 91.

WHO SHALL BE EDUCATED? The Challenge of Unequal Opportunities—W. Lloyd Warner, Robert J. Havighurst, and Martin B. Loeb—*Harper*, 190 p., \$2.50.

Science News Letter, May 27, 1944

•New Machines and Gadgets•

☼ **KITCHEN RANGES** may be used to dehydrate vegetables more satisfactorily when the oven door is replaced by a specially constructed front containing an electric fan and openings for the passage of air in and out.

Science News Letter, May 27, 1944

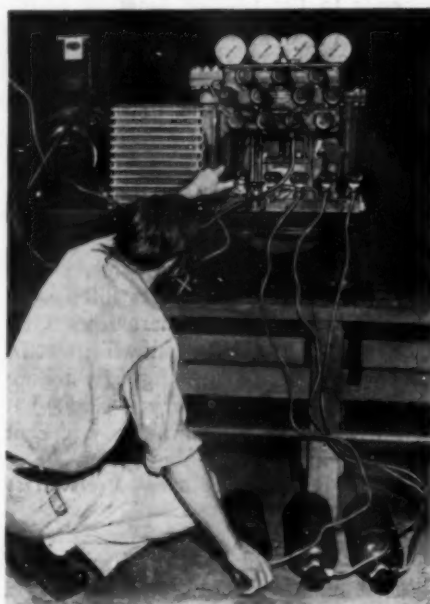
☼ **EXPLOSIVE** rivets used in war-plane construction now have an important improvement: the cavity for the tiny explosive charge extends along its shank instead of being only at the end. Detonation caused by heat applied to the head of the rivet with an electric iron expands the entire shank, making a tight fit.

Science News Letter, May 27, 1944

☼ **DRAFTSMEN'S** drawings are tested before being blueprinted with a device consisting of a two-panel illuminated table, both panels being lighted from underneath with illumination of the same intensity. A satisfactory drawing is placed on one, and the one being tested on the other, so that quick comparison is possible.

Science News Letter, May 27, 1944

☼ **NAVY** oxygen compressor, which quickly recharges aviators' oxygen cylinders, loads several at a time. It is portable and operated by electricity or a gas engine. The picture shows its motor and compressor on a steel base, and the valve



manifolds to provide individual control of gas flow to the small cylinders on the floor.

Science News Letter, May 27, 1944

☼ **CIGARETTE** roller, hand operated and for home use, has just been patented in a simplified, improved form. It rolls the tobacco into a cylindrical shape before it is moved on to the wrapping paper.

Science News Letter, May 27, 1944

☼ **TRANSPARENT** collapsible tubes for shaving cream, toothpaste and similar substances, made of a thermoplastic sheet with a rubber base, are promised for post-war days. The material, now used as a protective coating for war equipment, resists action of cosmetic ingredients and is economical.

Science News Letter, May 27, 1944

☼ **FLASHING LIGHTS** on an improved sanitary electric fly-killing apparatus indicate when the device is operating. This instrument, about the size of the breakfast-table electric toaster, attracts the flies, electrocutes them, and burns up most of the remains. The burning odor attracts more flies.

Science News Letter, May 27, 1944

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 209.

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